

Appl. No. 10/034,296
Amdt. dated October 28, 2005
Reply to Office Action of August 10, 2005

PATENT

REMARKS/ARGUMENTS

Claims 1, 12, 19, and 38 have been revised to place a greater emphasis on the claimed composites from the "batting-centric" rather than "aerogel-centric" perspective. The claims have been revised from the perspective of a continuous aerogel monolith containing a lofty batting to that of a lofty batting containing a continuous aerogel.

Applicants intend no change to the scope of the revised claims and believe no change in claim scope has occurred. Support for the revisions is provided at least by Figures 1-3, and page 7, second full paragraph, of the instant application.

Claims 2-11, 13-18, 20-37, and 39-48 have been revised to recite "article" so that they correspond to the same terminology in the independent claims from which they depend. No change in claim scope is intended or believed to have occurred.

Claim 7 has also been revised to refer to "dopant", which is supported at least on page 9, second full paragraph, and pages 22-23, Example 7, of the instant application.

Claim 16 has also been revised to remove the reference to "monolith" given the recitation of "continuous aerogel" in claim 12.

No new matter has been introduced, and entry of the revised claims is respectfully requested.

Interview of October 19, 2005

Applicants thank Examiners J. Boyd and T. Morris for the courtesy of an in-person interview with Applicants' representatives P. Muthukumaran and the undersigned on October 19, 2005. The interview included the Examiners' helpful comments and suggestions after a demonstration of an aerogel monolith and aerogel beads as well as an aerogel composite of the invention. The helpful comments included possible alternative language to obviate the cited Ramamurthi and Frank references of record. The Examiners suggested a possible focus on the composites as a lofty batting containing a continuous aerogel rather than a continuous aerogel monolith containing lofty batting. Applicants thank the Examiners for pointing out that support for emphasizing a combination of lofty batting containing a continuous aerogel is found at least in Figures 1-3 of the instant application.

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Rejections under 35 U.S.C. §103

Claims 1-32 and 38-43 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Ramamurthi et al. (USP 5,306,555) and Frank et al. (US 2003/0077438). Applicants have carefully reviewed the statement of the rejection and the cited documents and respectfully submit that no *prima facie* case of obviousness has been presented.

Well settled U.S. patent law requires that a suggestion or motivation to modify cited references be present to establish a *prima facie* case of obviousness.¹ The instant statement of the rejection—which asserts a factually incorrect result of “superior thermal and insulating properties” in combining the materials of Frank et al. and Ramamurthi et al.—fails to provide the required adequate suggestion or motivation. Therefore, Applicants respectfully submit that no *prima facie* case of obviousness is present.

The Federal Circuit has held that to establish a *prima facie* case of obviousness, there are only three possible sources of motivation to combine references:

“[t]here are only three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art.”²

The instant statement of the rejection does not rely on first possibility of the nature of the problem to be solved. The statement fails to point to any appreciation in the art for the preparation of a continuous aerogel in a lofty fibrous batting to result in a flexible, durable, and light-weight insulation product. Simply put, the art had no recognition that such a product was possible, especially given the rigid properties of aerogels. Thus no motivation based on the nature of the problem to be solved is present to support the instant rejection.

The instant rejection also does not rely on the second possibility of teachings of the art. Ramamurthi et al. disclose an aerogel based composite containing fibers, particularly in the form of mats or sheets. There is no teaching, suggestion, or other indication to use any other material in place of the fibers. Meanwhile, Frank et al. disclose an aggregated material comprising aerogel beads, fibers, and a binding agent which holds the beads and fibers together. While the Frank et al. fibers are optionally in

¹ See, for example, MPEP 2143.01 and the cases cited therein.

² *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-1458 (Fed. Cir. 1998).

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the form of "wadding", Applicants respectfully point out that there is no description of the fibers being "lofty" or otherwise sufficiently open in structure so that the beads and binding agent can penetrate the structure. As such, an artisan of ordinary skill presented with Frank et al. would understand that small amounts of fibers, such as in the form of bits of "wadding", are logically needed to permit aggregation with aerogel beads through a binding agent. Thus the fibers, or bits of "wadding", must be small enough in structure to permit aggregation with beads via a binding agent to product a relatively homogenous aggregate. If structurally large fibers or "wadding" were used, the resultant aggregate would be significantly heterogeneous, with portions that are little more than fibers only with a few beads attached via binder, and other sections that are essentially nothing more than aggregated beads with no fibers. This follows because the beads and binding agent would not be able to penetrate into the interior of the large fibers or "wadding".

Therefore, neither the Ramamurthi et al. or Frank et al. documents teaching or suggest a flexible, durable, and light-weight insulation material as encompassed by the claims. Moreover, neither document provides any teaching to suggest or motivate their combination. Therefore, the cited documents do not provide the required suggestion or motivation for their combination.

The instant rejection is also not based on "the knowledge of persons of ordinary skill in the art." There is no indication that a teaching or suggestion to combine Ramamurthi et al. and Frank et al. was within this "knowledge" at the time of the invention. Furthermore, and assuming solely for the sake of argument that motivation was present, a combination of the two documents would only lead to the use of small amounts of fibers or bits of "wadding" (as taught by Frank et al.) in place of the Ramamurthi et al.'s fibers in the aerogel composite. Applicants respectfully point out that such a combination would result in a material that is not the lofty fibrous batting containing a continuous aerogel as encompassed by the instant claims.

Despite the lack of a suggestion or motivation to combine the cited documents, the instant rejection alleges that it would have been obvious to combine the documents because the artisan of ordinary skill would have been "motivated by the desire to create a composite having superior thermal and insulating properties." Applicants respectfully point out that this "motivation" is factually incorrect because a combination of a lofty fibrous batting and continuous aerogel would not be expected to produce "superior thermal and insulating properties." To the contrary, the expectation would be that the lofty fibrous batting is likely lower the insulating properties due to thermal conduction through the fibers. Therefore, and contrary to the instant rejection, there is no "motivation" based upon an expectation of

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"superior thermal and insulating properties." Instead, the ordinary artisan would expect a combination of the two documents to produce materials with a reduction in "thermal and insulating properties." A reduction would not provide any motivation for the combination of the two references because both references describe using their respective materials for the properties they possess, without any suggestion or motivation to make and use materials with reduced properties.

Based on the foregoing, the instant rejection fails because it is not based on a suggestion or motivation from one of the three possible sources permitted by the Federal Circuit. Moreover, the rejection fails because the alleged motivation is factually incorrect such that no artisan of ordinary skill would use it as a basis for combining the cited references. Accordingly, Applicants respectfully submit that no *prima facie* case of obviousness is present, and this rejection may be properly withdrawn.

Claims 33-36 and 44-47 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Ramamurthi et al. (USP 5,306,555) and Frank et al. (US 2003/0077438) in view of Attey et al. (USP 5,544,487). Applicants have carefully reviewed the statement of the rejection and the cited documents and respectfully submit that no *prima facie* case of obviousness has been presented for the reasons discussed above.

Applicants respectfully submit that Attey et al. do not cure the deficiencies explained above in the Ramamurthi et al. and Frank et al. combination. Specifically, Attey et al. fail to provide any suggestion or motivation for the combination of Ramamurthi et al. and Frank et al. to each other or with Attey et al. In light of this deficiency, the instant rejection also fails to present a *prima facie* case of obviousness. Accordingly, Applicants respectfully submit that this rejection may be properly withdrawn.

Claims 37 and 48 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Ramamurthi et al. (USP 5,306,555) and Frank et al. (US 2003/0077438) in view of Nishimura (JP 032135545QA). Applicants have carefully reviewed the statement of the rejection and the cited documents and respectfully submit that no *prima facie* case of obviousness has been presented for the reasons discussed above.

Applicants respectfully submit that Nishimura does not cure the deficiencies explained above in the Ramamurthi et al. and Frank et al. combination. Specifically, Nishimura fails to provide any suggestion or motivation for the combination of Ramamurthi et al. and Frank et al. to each other or with

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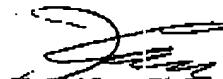
Nishimura. In light of this deficiency, the instant rejection also fails to present a *prima facie* case of obviousness. Accordingly, Applicants respectfully submit that this rejection may be properly withdrawn.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858-350-6100.

Respectfully submitted,


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